

WHAT IS CLAIMED IS:

1. A method of adjusting a movable amount of a worm shaft in a reduction gear for an electric power steering apparatus in which the worm shaft is supported movably in a rotation axis direction through an elastic body, the method comprising:

a first step of moving the worm shaft to opposite sides in the rotation axis direction respectively until maximum limit prior to the worm shaft formed with a worm meshing with a worm wheel being incorporated to an output shaft of a motor;

10 a second step of measuring a displacement of the worm shaft during the first step;

a third step of calculating a movable amount of the worm shaft based on a measured result of the second step; and

15 a fourth step of adjusting the movable amount of the worm shaft based on a calculated result of the third step.

2. The method according to claim 1, wherein the movement of the worm shaft during the first step is realized by applying a rotation torque to the worm wheel under a state that a rotation of the worm shaft is restrained.

3. The method according to claim 2, wherein a hysteresis of the displacement of the worm shaft and a hysteresis of the rotation torque of the worm wheel are measured in the second step, and

a relation of the displacement of the worm shaft with respect to the rotation torque exerted on the worm wheel is evaluated in the third step.

- 5 4. A movable amount adjustment apparatus for adjusting a movable amount of a worm shaft in a reduction gear for an electric power steering apparatus in which the worm shaft is supported movably in a rotation axis direction through an elastic body, the apparatus comprising:

10 a moving unit for moving the worm shaft to opposite sides in the rotation axis direction respectively until maximum limit prior to the worm shaft formed with a worm meshing with a worm wheel being incorporated to an output shaft of a motor;

a movable amount detection unit for detecting a movable
15 amount of the worm shaft based on a displacement of the worm shaft when the worm shaft is moved to the opposite sides in the rotation axis direction respectively until the maximum limit; and

a movable amount adjustment unit for adjusting the movable
20 amount of the worm shaft based on a detected result of the movable amount of the worm shaft.

5. The apparatus according to claim 4, wherein the moving unit applies a rotation torque to the worm wheel under a state
25 in which a rotation of the worm shaft is restrained.

6. The apparatus according to claim 4, wherein the moving unit applies a load in the rotation axis direction to the worm shaft.

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7. An elastic support assembly for an electric power steering apparatus in which a worm shaft is supported movably in a rotation axis direction through the elastic support assembly, the elastic support assembly comprising:

10 a pair of first and second members relatively moving in the rotation axis direction according to a movement of the worm shaft;

an elastic body provided between the first and second members in the rotation axis direction; and

15 a cover which covers an outer periphery part of the elastic body from a radial direction of the worm shaft and is connected to the first member.

8. The elastic support assembly according to claim 7, wherein
20 the first and second members include seating faces on which the elastic body seats, respectively, and

the seating face of at least one of the first and second members is formed with a protrusion part protruding toward the seating face of the other of the first and second members.

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9. The elastic support assembly according to claim 7, wherein the first and second members have substantially disc shape and respectively include insertion holes through which the worm shaft is inserted,

5 the elastic body includes an insertion hole through which the worm shaft is inserted,

the second member and the elastic body are interposed between the first member and the cover,

the cover includes an upper face having an insertion hole
10 through which the worm shaft is inserted, and a cylindrical periphery wall extending from an outer periphery part of the upper face to an outer periphery part of the first member, and

the periphery wall is connected to the first member, and the elastic body and the second member are accommodated in a
15 space defined by the first member, the upper face of the cover and the periphery wall of the cover so as to prevent the elastic body and the second member from separating therefrom.

10. The elastic support assembly according to claim 9, wherein
20 the first and second members include respectively seating faces on which the elastic body seats and, the seating face of at least one member of the first and second members is formed with a protrusion part protruding toward the seating face of the other of the first and second member.

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